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March 19, 1993

Mr. Randy Sturgeon  
U.S. Environmental Protection Agency  
841 Chestnut Building  
Philadelphia, PA 19107

REFERENCE: Contract No. 68-W9-0005 (TES VIII)  
Work Assignment No. C03095  
Site: Dover Gas Light Site

SUBJECT: Review Comments for the Feasibility Study (FS) Report

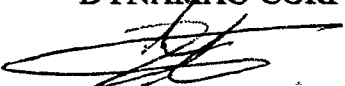
Dear Mr. Sturgeon:

In partial fulfillment of Task 7 of the Work Plan, Dynamac is pleased to present two hard copies and a magnetic copy (3.5" disk) of the technical review comments on the draft FS report for the above referenced site. The FS report dated February 15, 1993 was prepared for the PRPs by Consoer, Townsend & Associates. The review comments are provided as an attachment

If you have any questions or comments, please do not hesitate to contact me at (215) 989-9400.

Sincerely,

DYNAMAC CORPORATION



Camille Costa, P.E.  
Engineering Manager

Enclosures

cc: Ms. Donna McGowan, US EPA Region III CERCLA RPO  
Mr. Robert Steick, Dynamac TES VIII Regional Manager

AR306299

## **ATTACHMENT**

### **General Comments**

In general the Feasibility Study (FS) followed the guidelines presented in the document titled "Guidance For Conducting RI/FS under CERCLA". The FS has reiterated the findings and conclusions of the Remedial Investigation (RI) and the Risk Assessment (RA), which is currently under review by the EPA. The sections of the FS containing the RI/RA conclusions have not been reviewed in detail in light of the deficiencies noted in the review of the RI/RA document earlier. The reviewer understands that the RI/RA findings and the conclusions are being negotiated between the EPA and PRPs.

References to other sources of contamination should be characterized as "known" or "suspected". Known sources of contamination should be fully identified (e.g., company, address, etc.) and include specific references to documentation that denotes a release of contamination and that may be reviewed by EPA. Suspected sources of contamination should also be fully identified (e.g., company, address, potential source) and the source of the information from which the suspected contaminant source was identified. Any reference to potential sources that cannot meet these criteria should be removed from the report narrative and the figures.

The technology screening process is poorly organized without proper rationale for screening out or retaining particular technology. The alternatives developed for the site related source do not include any on-site treatment options. The alternatives developed for the on-site contaminated soil include only containment and off site disposal options. The requirements of Superfund Amendment Reauthorization Act (SARA) emphasize on-site treatment options whenever possible. The FS should consider at least one on-site treatment alternative for the contaminated soil. The potentially applicable technologies such as Soil Vapor Extraction, Air Sparging and Thermal Desorption should be discussed in detail. These technologies have proven to be cost effective in treating the types of organic contaminants found at the Dover site. Additional specific comments on the FS are presented below:

### **SPECIFIC COMMENTS**

#### **Comment No. 1**

**Section 2.2.3, Page 2-4, Paragraph 1, Last sentence:** Reference is made to a "deeper water bearing zone" named as the Federalsburg. Is this a reference to the Frederica aquifer, a reference to a formation name, or merely an error? The reference should be corrected or explained.

#### **Comment No. 2**

**Section 2.2.3, Page 2-5, Paragraph 1, Last sentence:** It would be more appropriate to state that "there is no" evidence of "hydraulic interconnection..."

**AR306300**

### **Comment No. 3**

**Section 2.2.3, Page 2-5, Paragraph 2, Sentence 3:** The storativities presented in Table 2-1 are low and would reflect storativity values found in confined aquifers, not "unconfined" aquifers. The text should be corrected.

### **Comment No. 4**

**Section 2.2.3, Page 2-5, Paragraph 3, Last sentence:** Wells 6C and 12C show contamination in the Frederica aquifer (Figure 3-19 of the RI Report). As such, the conclusion regarding the degree of interconnection between the Columbia and the Frederica should both refer to and reflect this finding.

### **Comment No. 5**

**Section 2.3, Page 2-6, Paragraph 1:** This paragraph contains numerous references to unspecified and undocumented sources of contamination. This section needs to be altered in keeping with the suggestions of the General Comment on this issue of undocumented sources. In addition, the reference (Johnson, 1992) cannot be found in any reference section of the report and, as such, cannot be reviewed. Additional information on this reference is needed.

### **Comment No. 6**

**Section 2.3, Page 2-6, Paragraph 4:** This paragraph contains assertions regarding unspecified and undocumented sources of contamination and needs to be brought into conformance with the General Comment pertaining to this issue of potential sources.

### **Comment No. 7**

**Section 2.3, Page 2-7, Paragraph 2:** The references to potential sources should be made more specific and the source of the information noted, as suggested in the General Comment pertaining to this issue of other potential sources.

### **Comment No. 8**

**Section 2.3, Page 2-8, Paragraph 1:** The assertion is made that no contamination was found in the lower portion of the Columbia Aquifer (horizon B), with the exception of two remote locations. Figure 2-16 shows BTEX contamination on-site (P-8) at the B horizon, which is contradictory to the statement in the FS report.

In addition, reference is made to unspecified and undocumented "background sources". This reference should be altered in keeping with the suggestions in the General Comment pertaining to this issue of other potential sources.

**AR306301**

Finally, the assertion is made that contamination in the Columbia aquifer "has not and is not likely to affect...The Frederica". As noted previously, Wells 6C and 12C show contamination in the Frederica, and as such, the assertion is incorrect.

#### **Comment No. 9**

**Section 2.3, Page 2-8, Paragraphs 2-4 & Page 2-9, Paragraph 1:** These paragraphs assert that the increase in BTEX and PAH concentrations in ground water downgradient from the site can only be explained by the presence of other hypothetical sources. The critical data point in this hypothesis is Well MW6. Another hypothesis that may be equally or more likely is that the high concentrations of chlorinated compounds found at MW6 (Figure 2-23) have mobilized previously transported and adsorbed PAHs (and BTEX) that originated at the site, leading to the increase in groundwater concentrations at MW6. As such, the multiple sources hypothesis in the narrative and the multiple plume graphics (Figures 2-18 and 2-19) are essentially speculative, especially so without a documented release, and should be removed from the FS report, unless a more balanced analysis is presented.

The previously commented upon (Johnson, 1992) reference is also found on Page 2-9.

#### **Comment No. 10**

**Section 2.3, Page 2-10, Paragraphs 4 & 5:** Using the statement that "site-related" PAHs have migrated only 400 feet from the site in more than 50 years" to prove that PAHs at MW13 are not site-related is circular reasoning, as the 400 foot limit has not been established, and as the limit of migration is in question. The use of undocumented sources to explain the PAH found at MW13 is unacceptable, as noted in the General Comment pertaining to this issue of other potential sources.

#### **Comment No. 11**

**Section 2.3, Pages 2-11 & 2-12, "Off-Site Sources...":** This section is highly speculative and does not serve any valid purpose in the FS report. It should be removed or altered to be in keeping with the suggestions of the General Comment pertaining to the issue of the other potential sources.

#### **Comment No. 12**

**Section 2.3, Page 2-12, Paragraph 2, "Surface-Water and Sediment...":** The PRP's conclusions in the RI report regarding the Pathway Analysis and the St. Jones River were called into question by Dynamac, and there has been no final decision on the part of EPA. As such, the conclusions regarding these two areas of investigation in the FS are premature and subject to revision. There is a considerable body of evidence to suggest that Tar Branch and the St. Jones River are contaminated as a result of the site.

AR306302

**Comment No. 13**

**Section 3.2.2, Page 3-5:** Please include Safe Drinking Water Act [42 U.S.C. 300(t)] as a potential ARAR for the Site. Chemical specific ARARs should include MCLs [40 CFR 141.11-141.16] and MCLGs [40 CFR 141.50-141.51]. MCLs and MCLGs should be used as the prime ARARs for determining the clean-up levels.

Table 3-1 should also include MCLs and MCLGs listed as ARARs.

**Comment No. 14**

**Table 3-2, Page 3-14:** Table 3-2 should list MCLs and MCLGs for the contaminants listed.

**Comment No. 15**

**Section 4.1, Pages 4-2 & 4-3:** References to off-site sources need to be altered in keeping with the suggestions of the General Comment pertaining to the issue of other potential sources.

**Comment No. 16**

**Section 4.1, Page 4-3, 3rd bulleted item:** The assertion that there is no site-related contamination of sediments has not been acceded to by EPA. As such, there may be need to complete the feasibility study requirements regarding this media.

**Comment No. 17**

**Section 4.1, Page 4-4:** Remedial Action Objectives (RAOs) should be reworded to include  $10^{-4}$  to  $10^{-6}$  risk levels as end points. Furthermore, remediation of groundwater to comply with the ARARs should also be listed as a RAO.

**Comment No. 18**

**Section 4.2.1, Page 4-5:** It is not clear if the source materials are liquids or solids, although the reported units (300 gallons) suggest that it may be liquids. Please provide additional details on the phase of the source materials and also discuss how it can be segregated from the soil.

**Comment No. 19**

**Section 4.2.3, Page 4-5 & 4-6, Figure 4-4:** Please provide rationale for using 100 ppb and 500 ppb value to determine the areal extent of BTEX and PAH respectively. Please provide the actual dimensions used in estimating the volume of the contaminated soil. It is not clear where the one to three feet clean fill exists on site. The Figure 2-8 and 2-9 show elevated BTEX and PAH concentrations at all depths across the Site right from the surface up to at least 20 feet. It is not clear how the clean soil can be segregated from the contaminated portion, when the sampling results shows uniform levels of contamination at almost all depth intervals. The

AR306303

reviewer fails to understand how this was factored into the calculation of the total volume of soil.

**Comment No. 20**

**Section 4.2.4, Page 4-6:** The rationale for determining the areal extent of Area A and Area B is not clear. MW-6 which has shown elevated levels of site-related PAHs (Figure 2-17) is outside of Area A which is classified as "area directly under the influence of Dover Gas Light Site". MW-6 has shown elevated levels of PAHs and BTEX which shows that it is under the influence of Site, hence Area A should be redetermined to include MW-6.

**Comment No. 21**

**Figure 4-6:** It is not clear how groundwater pumping can be considered as potential containment remedy for the source material. Pumping of groundwater may become necessary to dissipate a mound created by the application of vertical barrier technologies. Please clarify.

**Comment No. 22**

**Section 4.5.1, Page 4-11:** The multi-media cap may not be consistent with the current use of the land, since the multi-media cap typically calls for a vegetative cover. Along with the capping scenarios, surface water diversion structures should also be discussed, because upgrading of existing stormwater structures may become necessary after the construction of cap.

**Comment No. 23**

**Section 4.5.1, Page 4-12:** The vertical barriers should be keyed at least 2-3 feet into the confining layer. Please reword the sentence in Paragraph 2 on this page to incorporate this aspect. It is not clear if 30 feet considered here, is below the confining layer. Please discuss the groundwater mounding effects caused by the application of vertical barriers.

**Comment No. 24**

**Section 4.5.1, Page 4-13:** It is not clear how pumping of groundwater can address the source materials.

**Comment No. 25**

**Section 4.5.1, Page 4-14:** Please discuss the implications of land disposal regulations (LDRs) on the collection/disposal options.

**Comment No. 26**

**Section 4.5.1, Page 4-15, Fifth Paragraph:** The treatment process options are summarized in Table 4-1 and 4-6 not 4-5 as stated in this paragraph. Overall, the screening process has been poorly organized. The text does not correspond to the tables provided at the end of section 4.0.

AR306304

No clear reasons are given for selecting a particular technology for alternatives development and on the same token no reasons are given for screening out a particular technology.

**Comment No. 27**

**Section 4.5.2, Page 4-17 through 4-19, "Process Options for Contaminated Debris":** The contaminated debris, which to the most part contain brick and concrete rubble, may not lend themselves for most of the treatment options discussed under this section.

On page 4-18, in paragraph 4, it is stated that "with the exception of chemical reduction all of the processes were retained for further consideration", however, in the last paragraph it is stated that "extraction was chosen as primary technology". The rationale for this screening process should be clearly explained. Overall the screening process for this media is very poorly organized. The section lacks details of the screening process without any reference to the corresponding tables showing the results of the screening process. The section does not clearly state which technologies have been screened out and why. Furthermore, the descriptions of technology is generic, for example, "chemical extraction would involve using aqueous or organic solvent to rinse contaminants...". It is not clear which particular solvents will be applicable and how they will be applied.

Please explain the rationale for deciding which debris is clean. Provide an explanation of what analytical parameters and levels will be considered in making this decision.

**Comment No. 28**

**Section 4.5.3, Page 4-19 through 4-22, "Process Options for Contaminated On-Site Soils":** It is not clear why siting an in-situ treatment system on-site may be difficult versus an ex-situ treatment system. In the reviewer's opinion the in-situ treatment system will require less space than an ex-situ system.

Biological treatment is also applicable for vadose zone, especially bioventing or biodegradation has been considered to be very effective for soil contamination with BTEX related compounds. Well proven in-situ soil vapor extraction should also be considered for treating the volatile organics and PAHs.

The applicability of soil flushing for saturated zone soils is questionable. Typically, soil flushing is appropriate for vadose zone soils only. Furthermore, soil flushing may be ineffective for PAHs which tends to absorb strongly to the soil.

It is not clear why any of the in-situ treatment technologies have not been retained for alternative development. In-situ vapor extraction, in-situ bioventing are probably cost-effective considering the nature of the contaminants.

The rationale for not retaining any of the on-site ex-situ treatment technologies is not provided. Low temperature thermal desorption may be the most applicable technology. At least two on-site ex-situ treatments should be retained for alternative development. The Superfund

**AR306305**

Amendment Reauthorization Act and the RI/FS guidelines indicate that on-site treatment options are preferred over off-site disposal and treatment. A detailed discussion of on-site treatment options is warranted considering the fairly large volume of contaminated material.

**Comment No. 29**

**Section 4.5.4, "Process Options for Contaminated Groundwater On-Site":** It is not clear why the developed nature of the area limits the implementation of in-situ operations. On page 4-24 in the third paragraph, the reference to the table is wrong. The treatment options are summarized in Table 4-5 not 4-6.

Incineration has been included as one of the remedies for groundwater in the initial screening (Figure 4-10) which is totally not applicable.

The screening process in this section has the same problems as previous sections. There is no logical explanation for selecting the representative option for the alternative development. It is not clear why none of the in-situ technologies were considered for alternative development. In the reviewer's opinion, in-situ technologies would have been good alternatives considering the site contaminants.

Please differentiate air-stripping from air-sparging. Air-sparging technology has been loosely used without any explanation. It should be noted that air-sparging is an in-situ technology where air is delivered to the saturated zone under pressure which facilitates stripping of contaminants from the groundwater and the saturated zone. Air sparging also enhances biodegradation which is a secondary benefit. Air-sparging should always be complimented with soil vapor extraction in the vadose zone.

It is recommended that each of the applicable technologies identified in Table 4-5 be discussed in the text. Please provide rationale why only air stripping was retained from a list of 15 applicable technologies. The text should refer to the tables and an explanation be provided for the contents of the tables.

The treatment option should consider some inorganic treatment technologies which may be necessary as pre-treatment steps.

The discharge of treated water in the St. James River should may not be concern and should be viewed as a possible alternative. The last paragraph on 4-24 and the third paragraph on page 4-23 are the same - word to word, which is incorrect. The implications of discharging untreated water (third paragraph, page 4-23) are different from discharge of treated water (page 4-24, last paragraph). Please differentiate between the two discharges. The feasibility study should research the levels of contaminants permitted by Kent County facility. The feasibility study should also indicate the position of Kent County regarding the discharge.

**AR306306**



**Comment No. 30**

**Section 4.5.5, "Containment Process Options for Contaminated Soil Off-Site":** It is not clear how hydraulic containment would be applicable for soils in the vadose zone. The description provided in the last two paragraphs on page 4-25 is applicable for the groundwater and not for soils.

Collection/disposal options should be discussed for isolated hot-spot locations.

Biological treatment was screened out as non-effective for on-site soils, however it has been retained for off-site soils. The rationale for this selection is not clear.

Although the feasibility study rightly points out that the application of most of in-situ and ex-situ options may not be practical due to the site conditions, effort should be made to identify remedial options for the hot-spots.

**Comment No. 31**

**Section 4.5.6, "Process Options for Contaminated Groundwater Off-Site":** The discussion in this section is not different from section 4.5.4, hence the comments made under 4.5.4 are also applicable to this section.

An additional issue which needs discussion for off-site groundwater is the location of the treatment system and the delivery of groundwater from different locations to the treatment system.

**Comment No. 32**

**Section 5.0:** Alternatives with vertical barrier option should also include potential groundwater extraction/treatment/disposal to dissipate mound created by the grout curtains. The cost estimation for all alternatives with vertical barrier component should include the cost for the mound dissipation.

Please clarify the On-site and Off-site treatment and/or disposal under alternatives 4a and 4b.

**Comment No. 33**

**Section 5.1:** The existing Institutional Controls should be discussed in detail in this section.

**Comment No. 34**

**Section 5.1.1.3:** It should be noted that the future construction activities involving excavation in this area may pose risks beyond the permissible levels if the contaminated soil is left in place without any treatment or containment.

**AR306307**

**Comment No. 35**

**Section 5.1.1.4:** No Action alternative will not comply with the ARARs for the groundwater as levels exceed the MCLs and MCLGs. This comment applies to all alternatives which do not address the groundwater.

**Comment No. 36**

**Section 5.2.1:** It should be noted that the installation of the cap will not prevent the future contamination of the regional groundwater flowing through the contaminated soil. The cap will only minimize the infiltration of the precipitation which is only a small portion contributing to the regional groundwater system.

**Comment No. 37**

**Section 5.2.2:** The mounding caused by the grout curtains should be estimated to discuss the potential impacts.

**Comment No. 38**

**Section 5.3, Page 5-25:** The details of the modeling exercise used estimate the location and number of the extraction wells should be discussed in detail.

**Comment No. 39**

**Section 5.3.1.1:** It is recommended that groundwater clean-up time frame be estimated. Simple analytical solutions can be used estimate a reasonable time frame of remediation assuming MCLs as the end points.

**Comment No. 40**

**Section 6.8, Page 6-6:** The selection of the remedial alternatives for the Dover Site should be based on the fact that the groundwater contaminant levels underneath the site and the surrounding areas exceed the MCLs and the MCLGs. The presence of the contaminated soils and the other material will act as continued source for the groundwater contamination as well as pose considerable risk for the human health due to direct contact exposure during potential future construction activities. The soil and other material underneath the site will be classified as principal threats due to the levels of the organic contamination. The principal threat materials and the areas should be subjected to treatment and not just contained as proposed in this FS.

**AR306308**